Fatality Prevention - Rules to Live By

Welcome to the online refresher training for the **Prevent Fatalities – Rules to Live By** program. The **Rules to Live By** program is a new outreach and enhanced enforcement program designed to strengthen efforts to prevent mining fatalities.

The goal of **Rules to Live By** is to reduce deaths and injuries from the targeted standards by having mine operators identify and correct ("find and fix") all hazardous conditions and to have MSHA enforcement be directed toward confirming that violations related to these conditions are not present at mines.

The program will spotlight the safety standards most frequently cited during fatal accident investigations through outreach efforts with the mining industry and enhanced enforcement by MSHA inspectors.

Select Next to continue.

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While the U.S. mining community achieved a record-setting low in the number of mining deaths in the last year, and has seen a significant decline in fatal mining accidents during the past 10 years, too many miners still lose their lives in preventable accidents. MSHA conducted an analysis of the 589 mining deaths in the 21st century through 2008.

Select Next to continue.

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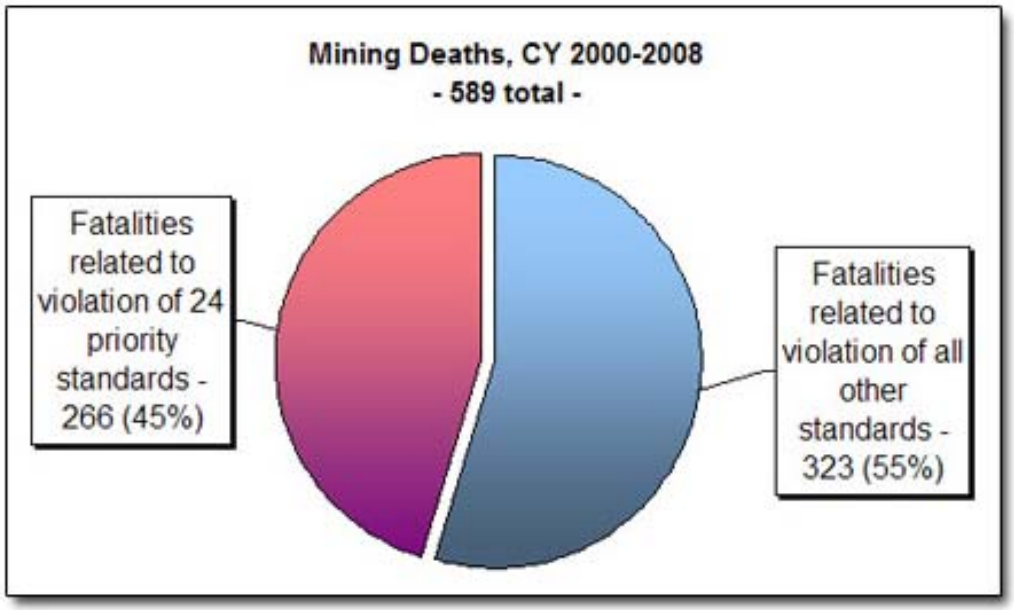
The analysis identified the most common conditions and practices that contributed to mining deaths, as well as the most common violations of safety standards and root causes associated with these fatal accidents.

As a result of that analysis, MSHA identified 11 coal and 13 metal/nonmetal safety and health standards frequently cited in fatal accident investigations.

Violations of the 24 identified standards contributed to 266 (45%) of the 589 total fatalities which occurred between calendar years 2000 and 2008.



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The loss of even one miner causes devastation and pain to the deceased miner's family, friends, co-workers and MSHA personnel.

MSHA grouped the identified standards, the violations which contributed to or caused the death of miners from 2000 to 2008, into the following nine "Rules to Live By" accident categories:

- Falls from elevation: 61 miners died (Coal – 19 & MNM – 42)
- Falls of roof and rib: 72 miners died (Coal – 62 & MNM – 10)
- Operating mobile equipment (surface): 67 miners died (Coal – 27; MNM – 40)
- Operating mobile equipment (underground): 17 miners died (Coal – 14; MNM – 3)
- Maintenance: 34 miners died (Coal – 13; MNM – 21)
- Lock and tag out: 39 miners died (Coal – 17; MNM – 22)
- Blocking against motion: 32 miners died (Coal – 21; MNM – 11)
- Struck by mobile equipment (surface): 25 miners died (Coal – 10; MNM – 15)
- Struck by mobile equipment (underground): 29 miners died (Coal – 23; MNM – 6)

Footnote 1: It is important to note that in many cases noncompliance with more than one standard contributed to the fatal accidents.

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Violations of 11 identified coal standards contributed to 140 (47%) of the 300 Coal fatalities.

Violations of 13 identified MNM standards contributed to 126 (44%) of the 289 MNM fatalities.

Select Next to continue.

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All of us must focus on why these accidents happen and how to prevent them.

Prevent Fatalities - Rules to Live By will roll out in two phases: (1) industry outreach and (2) enhanced enforcement. During the first phase,

- MSHA will disseminate information detailing the causes of the targeted fatal accidents to mine operators, labor organizations, state training grantees, training instructors, and other stakeholders.
- The MSHA Web site will provide compliance assistance materials such as engineering suggestions, packages of safety target materials and other information to ensure that mine operators and miners have the necessary resources to address and eliminate workplace hazards.

Select Next to continue.

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On March 15, 2010, MSHA will begin enhanced enforcement by paying special attention to violations of the 24 standards.

As part of this effort, all mine inspectors will receive online training, instructions on the inspector laptop applications specific to this initiative, enforcement summaries and inspector tip sheets.

Mine inspectors are asked to carefully evaluate gravity and negligence – consistent with the seriousness of the violation – when citing violations of the standards that have caused or contributed to mining fatalities.

Select Next to continue.

MSHA
Mine Safety and Health Administration

Produced by the National Mine Health and Safety Academy

Fatality Prevention - Rules to Live By

This online program is designed to be a refresher training for you, the inspector, focusing on these 24 standards. In this program, we will:

- Review the standard and any related data from the Program Policy Manual.
- Highlight hazards and practices which have contributed to fatalities in the past.
- Present a series of Knowledge Check questions relating to each standard.

Select Next to continue.

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Navigation

MSHA's online courses are very easy to navigate. Each page has a similar layout that includes the class title, navigational buttons, and content section. Every page also includes *red instructional text* located at the bottom right of each page to help you navigate that particular page. Buttons at the top of each page are:

 - The **Home** button can be clicked at any time during the program to return to the beginning of the course.

 - The **Help** button is located in the upper right corner of the page for technical assistance with the course.

 - The **Exit** button, also located in the upper right corner of the page, allows you to exit the course completely.

Select Next to continue.

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Navigation, cont'd.

Along the bottom of each page, you will find the following:

- The Regulations button provides you with links to Title 30 CFR.
- The Resources button provides web sites and documents that relate to the course.
- The Contact button provides you information on how to contact the course instructor or a Help Desk technician.
- The Back button takes you back to the previous screen in the program.
- The Next button takes you to the next screen in the program.

Any time the Back or Next buttons are grey then you may not navigate in that direction. If you are unsure how to continue, look for the *red instructional text* at the bottom of the page.

Select Next to continue.

MSHA
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From here we will allow you to focus on your Program Area:

Please Click the appropriate button below to access the course content.

Select your program area above to continue.

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Fatality Prevention - Rules to Live By

Welcome to the Metal/Nonmetal portion of the **Prevent Fatalities - Rules to Live By** Program.

Between January 1, 2000, and December 31, 2008, there were 289 fatalities in Metal/Nonmetal mines in the United States. Of these fatalities, 126 (44%) are cited under 13 standards.

We will cover these 12 standards from 30 CFR §56 and 1 standard from 30 CFR §57 in this course.

Select Next to continue.

Fatality Prevention - Rules to Live By

The 13 standards frequently cited in Metal/Nonmetal are:

56.14105	Procedures during repairs or maintenance
56.15005	Safety belts and lines
56.9101	Operating speeds and control of equipment
56.14101(a)	Service brake performance
56.14205	Machinery, equipment, and tools used beyond design
56.20011	Barricades and warning signs
56.16009	Persons shall stay clear of suspended loads
57.3360	Ground support use
56.14131(a)	Seat belts provided and worn in haul trucks
56.14130(g)	Wearing seat belts
56.12017	Work on power circuits
56.16002(c)	Bins, hoppers, silos, tanks, and surge piles
56.14207	Parking procedures for unattended equipment

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14105
Procedures during repairs or maintenance.

Violations involving failure to prevent hazardous motion of machinery or equipment during maintenance or repairs accounted for the highest number of fatalities at Metal and Nonmetal mines for CY2000 - CY2008.

Select Next to continue.

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30 CFR §56.14105 states the following regarding **Procedures during repairs or maintenance.**

"Repairs or maintenance of machinery or equipment shall be performed only after the power is off, and the machinery or equipment blocked against hazardous motion. Machinery or equipment motion or activation is permitted to the extent that adjustments or testing cannot be performed without motion or activation, provided that persons are effectively protected from hazardous motion."

Select Next to continue.

Fatality Prevention - Rules to Live By

Conditions Resulting in Fatalities

Failure to comply with procedures during repairs or maintenance under section 56.14105 led to these types of conditions resulting in fatalities:

- Machinery or equipment not blocked against hazardous motion during repairs or maintenance.
- Equipment not effectively de-energized.
- Persons not protected against hazardous motion during testing or adjustments.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

During your inspection, observe miners and their work procedures during repairs or maintenance on machinery or equipment. Be sure to answer the following questions, which may help you assess whether a violation has occurred:

- Is machinery or equipment blocked against hazardous motion during repairs or maintenance? For example, will the equipment move when the miner breaks or undoes a connection?
- Is equipment effectively de-energized?
- Are persons protected against hazardous motion during testing or adjustments?
- What hazardous motion is possible and have efforts been taken to prevent movement?
- Are adequate blocking materials available?
- Does the machinery or equipment require motion for maintenance or repair purposes?
- Is there a hazard from stored energy sources?

Select Next to continue.

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Additional Resources for this topic can be found on our Web site.

MSHA's Accident Prevention Program:

- Miner's Tips, Blocking Raised Equipment
- Safety Ideas, Proper Blocking

Select Next to continue.

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Knowledge Check

What must be provided for miners if motion is required to complete a repair?

- Hard hats
- Steel toed boots
- Effective protection for miners from hazardous motion
- Safety Harnesses

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.15005
Safety belts and lines.

Every year a miner dies from a fall. Falls need to be prevented, and the lives of those miners who fall would be saved if they were each wearing safety belts and lines with lanyards attached to secure anchor points.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.15005 states the following about **Safety belts and lines.**

"Safety belts and lines shall be worn when persons work where there is danger of falling; a second person shall tend the lifeline when bins, tanks, or other dangerous areas are entered."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

When inspecting, be observant for these types of conditions which lead to fatalities:

- persons not wearing safety belts and lines when exposed to a fall hazard.
- miners are not tied-off using adequate anchor points.
- second person not tending the lifeline when bins, tanks, or other dangerous areas are entered.

Remember - Safety belts and lines are not a replacement for providing safe access to areas where miners are required to travel as a normal part of their work assignments.

Select Next to continue.

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Inspection Tips

Ask the operator to provide the fall protection devices available at the mine and inspect their condition.

- If fall protection devices are not available and work has been done from locations which present fall hazards, inspectors should determine how and why such work was done from elevation without fall protection being provided.
- Take appropriate enforcement actions.

Click here to view MSHA's Accident Prevention Program Safety Ideas and Tips for fall protection.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

According to 56.15005, safety belts and lines should be cited when:

- Where there are no ladders in use.
- Where there are handrails available.
- Where there is safe access to the area.
- Where there is a danger of falling.

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

What is the primary duty of the second person when a miner enters bins, tanks, or other dangerous areas?

- To make sure no one turns the equipment on.
- To tend the lifeline.
- To give instructions.
- To hold the ladder.

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.9101
Operating speeds and control of equipment.

Fatal accidents result from equipment operators failing to control their equipment and operating at an unsafe speed. Many times this standard is violated in conjunction with other standards (i.e. seat belts not worn). By eliminating conditions involving unsafe speed or failure to control equipment, fatal accidents can be reduced.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.9101 states the following about **Operating speeds and control of equipment.**

"Operators of self-propelled mobile equipment shall maintain control of the equipment while it is in motion. Operating speeds shall be consistent with conditions of roadways, tracks, grades, clearance, visibility, and traffic, and the type of equipment used."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Observe mobile equipment operations for these types of conditions leading to fatalities:

- Equipment operator not maintaining control of equipment while in motion.
- Operating speeds not consistent with the conditions.

Determine if mobile equipment is:

- operating on too great a slope.
- operating at an unsafe speed for the terrain, road conditions, or weather conditions.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Operators of self-propelled mobile equipment shall maintain _____ while it is in motion.

- control of the equipment
- a speed of 45 mph
- a speed less than the posted limit
- control of their emotions

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

What might be a reason for reducing the operating speed of a piece of mobile equipment? (select those specific to 56.9101)

- Road conditions
- Hauling more than 20 tons
- Hauling more than 5 tons
- Less than 5 years operating experience

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.14101(a)
Brakes.

Braking systems on mobile equipment must always be maintained in a functional condition. Fatalities involving self-propelled mobile equipment occur when braking systems are not maintained in functional condition, service brakes fail to stop and hold the mobile equipment, or the parking brake fails to hold the equipment on the grade it typically travels.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14101(a) states the following **about Brakes.**

"(a) *Minimum requirements.* (1) Self-propelled mobile equipment shall be equipped with a service brake system capable of stopping and holding the equipment with its typical load on the maximum grade it travels. This standard does not apply to equipment which is not originally equipped with brakes unless the manner in which the equipment is being operated requires the use of brakes for safe operation. This standard does not apply to rail equipment.

(2) If equipped on self-propelled mobile equipment, parking brakes shall be capable of holding the equipment with its typical load on the maximum grade it travels.

(3) All braking systems installed on the equipment shall be maintained in functional condition."

Select Next to continue.

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Program Policy Manual

Volume IV of the Program Policy Manual explains how subsection (a) is divided and when to cite under each part. The PPM states:

> "Subsection (a) is divided into three parts. Part (1) of this subsection sets a minimum performance standard for service brake systems on self-propelled mobile equipment. Part (2) sets a minimum performance standard for parking brakes on self-propelled mobile equipment. Part (3) sets a maintenance standard for all braking systems on self-propelled mobile equipment.
>
> Standard 56/57.14101(a)(1) should be cited if a service brake system is not capable of stopping and holding the equipment with its typical load on the maximum grade it travels."

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Program Policy Manual, cont'd.

"Standard 56/57.14101(a)(2) should be cited if the parking brakes are not capable of holding the equipment with its typical load on the maximum grade it travels.

Standard 56/57.14101(a)(3) should be cited if a component or portion of any braking system on the equipment is not maintained in functional condition even though the braking system is in compliance with (1) and/or (2). It is important to note that if a component or portion of either system renders the equipment incapable of stopping or holding itself with its typical load on the maximum grade it travels, the appropriate standard, 56/57.14101(a)(1) or (2), should be cited.

Separate citations or orders should be issued if violations of 56/57.14101(a)(1) and 56/57.14101(a)(2) are found on the same piece of equipment."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

All self-propelled mobile equipment should be inspected for these types of conditions leading to fatalities:

- Service brakes not capable of stopping and holding equipment with its typical load on maximum grade it travels.
- Parking brakes not capable of holding equipment with its typical load on maximum grade it travels.
- A brake system component not maintained in a functional condition.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

After testing, you find that the piece of self-propelled mobile equipment has defective service and park brakes not capable of stopping and/or holding the equipment with a typical load on the maximum grade it travels. What should be cited? (select all correct answers)

- [ ] 56.14101(a)(1) service brakes
- [ ] 56.14101(a)(2) park brakes
- [ ] 56.14101(a)(3) failure to maintain brake systems

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.14205
Machinery, equipment and tools.

Machinery, equipment and tools are sometimes used beyond the design capacity intended by the manufacturer, creating a hazard. From 2000 through 2008, these hazards were contributing factors in 14 fatalities in U.S. Metal/Nonmetal mines.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14205 states the following about **Machinery, equipment, and tools.**

"Machinery, equipment, and tools shall not be used beyond the design capacity intended by the manufacturer where such use may create a hazard to persons."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

During your inspection, be observant for these types of conditions leading to fatalities:

- Using machinery, equipment, or tools beyond design capacity intended by the manufacturer, e.g., pipe as bracing, cinder blocks for support, where such use creates a hazard.
- Look for tools, machines or equipment which have been modified from original design capacity, e.g., trucks modified for use as water trucks may be over the GVWR weight, loader teeth/shanks used to clear crushers).

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspector Tips

These activities have caused fatalities in the past:

- Using cranes to hoist loads beyond their capacity
- Blocking methods/materials not suitable for the application
- Overloaded equipment

These are by no means the only ways in which accidents can occur from misuse of machinery, equipment and tools.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Which of the following conditions are not an element of a violation of 56.14205?

- a tool is used for a purpose it was not designed for
- a tool is being used beyond its design capacity
- a tool's use is not creating a hazard

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.20011
Barricades and warning signs.

Fatalities involving violations of 30 CFR §56.20011 occurred when miners stepped on unsecured coverings/grating and opening covers not designed to support the miner's weight. Hazards such as these may not be obvious to miners, but can be prevented by providing barricades or proper warning signs.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.20011 states the following regarding **Barricades and warning signs.**

"Areas where health or safety hazards exist that are not immediately obvious to employees shall be barricaded, or warning signs shall be posted at all approaches. Warning signs shall be readily visible, legible, and display the nature of the hazard and any protective action required."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

During your inspection, be observant for these types of conditions which lead to fatalities resulting from failure to provide barricades or warning signs:

Barricades not provided or warning signs not posted at all approaches where health or safety hazards exist that are not immediately obvious.

Safety hazards that are not immediately obvious to employees are frequently found during maintenance or construction activities. During your inspection, be aware of the potential for violations during these types of activities.

These types of hazards and violations are often of a short duration. It is important to identify these violations not only to correct the observed violations, but to prevent future accidents by stopping the practice of allowing hazards that are not immediately obvious to go unrecognized.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection, cont'd.

Health hazards that are not immediately obvious to employees may be found in several locations: labs, smelting areas, welding areas, and areas near vent or hood discharges. During your inspection, be aware of the potential for violations at these types of locations.

Select Next to continue.

Fatality Prevention - Rules to Live By

Program Policy Manual

The Program Policy Manual explains the purpose of **30 CFR §56.20011**. It states:

> "This mandatory standard is to ensure that barricades are provided or warning signs posted to alert workers and other persons and to prevent them from inadvertently entering areas in which health or safety hazards exist but are not obvious. Examples of health hazards are heat, acids, gases, dusts, noise, and radiation. All areas of a mine or mill should be checked for imperceptible health hazards. Storage facilities, laboratories, dumps, and tailings commonly contain toxic substances.
>
> Warning signs are posted for the purpose of describing particular hazards and indicating precautions to be followed in order to avoid injury and illness."

Click here to view the PPM on the MSHA Web site.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Areas where health or safety hazards exist that are not immediately obvious to employees shall be barricaded, or warning signs shall be posted at all approaches.

- True
- False

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

Warning signs for areas where health or safety hazards exist that are not immediately obvious to employees shall:

- [ ] be posted at all approaches
- [ ] be readily visible
- [ ] be legible
- [ ] display the nature of the hazard
- [ ] note any protective action required

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR § 56.16009
Suspended loads.

Miners who work or travel under or near suspended loads risk fatal injuries. Fatal accidents have occurred when suspended loads fell and struck miners.

Miners need to stay clear of suspended loads.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR § 56.16009 states the following regarding **Suspended loads.**

"Persons shall stay clear of suspended loads."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

During your inspection, be observant for violations where persons do not stay clear of suspended loads.

- Violations involving persons failing to stay clear of suspended loads have led to fatalities.

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspection Tips

When maintenance or construction activities are occurring, violations of 56.16009 can easily happen.

Look for activities taking place at or near cranes, where pipe laying is occurring, in shops where overhead hoists are in use, etc.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Persons shall _____ suspended loads.

- maintain the speed of
- stay clear of
- reduce the height of
- always monitor

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §57.3360
Ground support use.

From 2000 through 2008, violations of **30 CFR §57.3360** contributed to 7 fatalities. The violations involved mine operators failing to design, install, and maintain ground support systems where ground support was necessary.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §57.3360 states the following regarding **Ground support use:**

"Ground support shall be used where ground conditions, or mining experience in similar ground conditions in the mine, indicate that it is necessary. When ground support is necessary, the support system shall be designed, installed, and maintained to control the ground in places where persons work or travel in performing their assigned tasks. Damaged, loosened, or dislodged timber use for ground support which creates a hazard to persons shall be repaired or replaced prior to any work or travel in the affected area."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Observe ground support use for these types of conditions leading to fatalities: Necessary ground support not designed, installed, and maintained in areas where persons work or travel.

In mines where ground conditions indicate support is needed, mine operators should demonstrate what safety procedures are in place to ensure miners are not at risk from unstable ground conditions.

Question miners and supervisors regarding the procedures used when unstable ground is encountered. Confirm that they know how, when and where to install ground support.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection, cont'd.

- Identify any conditions where ground support is in use. If these conditions are present at other locations, is ground support in use?
- Is the ground support in need of repair?
- Are proper warning signs in place in areas in need of ground support/repair?

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspection Tips

Ask the operator if they use ground support in the mine. If so, ask them how it is designed, installed, and maintained.

If conditions appear to be similar to other locations where ground support is used, question the operator as to why it is not in use at this location.

Is ground support correctly installed?

Look for damaged, loose or dislodged timbers.

Has work or travel occurred in the affected area when damaged, loose or dislodged ground support timbers were present?

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

When ground support is necessary, the support system shall be designed, installed, and maintained to control the ground in places where persons work or travel in performing their assigned tasks.

- True
- False

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.14131(a)
Seat belts for haulage trucks.

From 2000 through 2008 there were 15 fatal accidents involving violations of 30 CFR §56.14131(a) or 30 CFR §56.14130(g) relating to seat belts.

In addition, there were 2 additional fatalities, not involving sections 56.14130(g) or 56.14131(a), where the equipment operator jumped from the cab. In 2005, two miners were in the cab of a haul truck that traveled over a highwall. The miner operating the truck, who was wearing his seat belt, was hospitalized and released the next day. The miner in the passenger seat, who was not wearing a seat belt, was fatally injured.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14131(a) states the following regarding **Seat belts for haulage trucks:**

"(a) Seat belts shall be provided and worn in haulage trucks."

Select Next to continue.

Fatality Prevention - Rules to Live By

Program Policy Manual

Regarding the negligence and gravity of violations of 30 CFR §56.14131(a), the Program Policy Manual states: "[i]n an effort to reduce the severity of powered haulage accidents, district managers shall carefully consider the gravity and negligence of citations and orders issued for the failure to provide, maintain, or wear seat belts.

- According to the PPM, the failure to provide, maintain, or wear seat belts is a serious safety hazard and without mitigating circumstances should be a significant and substantial violation.
- In addition, the failure to provide seat belts may be considered highly negligent and therefore the basis for a 104(d) citation/order in the absence of mitigating circumstances.
- Finally, all citations/orders issued for failure to provide, maintain, or wear seat belts should be reviewed for special assessment.

Click here to view the entire PPM.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Observe haul truck operators to see that seat belts are provided and being worn in haul trucks. Seat belts not being worn when operating or riding in haul trucks is a condition leading to fatalities.

The standard has two requirements. Seat belts for haulage trucks must be (1) provided and (2) worn.

- When you inspect a haul truck, check whether seat belts are provided for all seats. If there is a jump/training seat, a seat belt must be provided for the occupant's use.
- Persons in a haul truck are required to wear the provided seat belt.

Look at the following while inspecting the seat belts:

- If the seat belt is missing, check pre-shift examination and maintenance records.

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspection Tips

If there is a passenger seat, is the seat belt present?

Determine use and whether maintained in functional condition by observing the condition and location of the seat belts, e.g., covered with grease, jammed under the seat and cannot be used.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Seat belts should always be worn when operating a haul truck.

- True
- False

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

If you find a haul truck operator not wearing a seat belt and a passenger in the rider's seat with no seat belt, is it a violation?

- Yes
- No

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR § 56.14130(g) states the following about **seat belts:**

"(g) *Wearing seat belts.* Seat belts shall be worn by the equipment operator except that when operating graders from a standing position, the grader operator shall wear safety lines and a harness in place of a seat belt."

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14130(g)
Roll-over protective structures (ROPS) and seat belts.

30 CFR § 56.14130(g) applies only to the mobile equipment listed in subsection (a). Seat belts violations under this subsection (g) are limited to the listed types of mobile equipment.

"Equipment included. Roll-over protective structures (ROPS) and seat belts shall be installed on--

1. Crawler tractors and crawler loaders;
2. Graders;
3. Wheel loaders and wheel tractors;
4. The tractor portion of semi-mounted scrapers, dumpers, water wagons, bottom-dump wagons, rear-dump wagons, and towed fifth wheel attachments;
5. Skid-steer loaders; and
6. Agricultural tractors."

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14130(g)
Roll-over protective structures (ROPS) and seat belts.

There are other exemptions. Subpart (f) of the standard states:

"(1) This standard does not apply to--
(i) Self-propelled mobile equipment manufactured prior to July 1, 1969;
(ii) Over-the-road type tractors that pull trailers or vans on highways;
(iii) Equipment that is only operated by remote control; and

(2) Self-propelled mobile equipment manufactured prior to October 24, 1988, that is equipped with ROPS and seat belts that meet the installation and performance requirements of 30 CFR 56.9088 (1986 edition) shall be considered in compliance with paragraphs (b) and (h) of this section."

Select Next to continue.

Fatality Prevention - Rules to Live By

Program Policy Manual

As with 30 CFR §56.14131(a), the Program Policy Manual provides guidance on negligence and gravity with regard to **30 CFR §56.14130(g)**, including:

> "Some factors that could increase the degree of negligence are if the defect has been reported on a preshift examination, the defect is obvious, or the defect has existed for a long period of time. The examination of seat belts for defects is required by 30 CFR 56/57.14100."

Click here to view the PPM on MSHA's Web site.

Select Next to continue.

Fatality Prevention - Rules to Live By

Program Policy Manual, cont'd.

The PPM also contains notes on how the efforts of the mine operator to enforce seat belt use might affect the determination of negligence:

> "Negligence for failure to wear seat belts should be determined by the extent of the mine operator's efforts to enforce the seat belt requirement. Examples of such efforts may include:
>
> 1. evidence that the equipment operators are instructed on the mandatory use of seat belts;
> 2. regular observation by supervisors to determine whether seat belts are being worn;
> 3. corrective action taken by supervisors when seat belts are not being worn; and
> 4. the development and implementation of a job safety analysis program to reinforce task training for equipment operators."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Observe to see that seat belts are being worn by equipment operators. Violations of this type have led to conditions resulting in fatalities from: Failure to wear seat belts while operating mobile equipment.

- Inspect all of the listed types of mobile equipment for seat belts, then determine whether an exemption applies.
- Review the mine file for any history of seat belt related accidents or violations.

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspection Tips

- Check the seat belt on all open cab mobile equipment (they are often wet and dirty and not used).
- Determine use and whether maintained in functional condition by observing the condition and location of the seat belts, e.g., covered with grease, jammed under the seat and cannot be used.
- On tall cab graders, look for standing operators. If spotted, check for harness and lanyard use.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

According to 56.14130(g), what type of equipment can be operated from a standing position without the operator wearing a seat belt?

- Haul Trucks
- Forklifts
- Front end loaders
- Graders

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

According to 56.14130(g), what should be used in place of a seat belt when operating a grader from a standing position?

- Seat belt extensions
- Safety lines and a harness
- Lifelines
- Seat belts with shoulder harnesses

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

Which of the following are exemptions for seat belts according to the PPM for 56.14130(g)?

- [ ] Mobile equipment not listed as applicable under the standard
- [ ] A seated grader operator
- [ ] Self-propelled mobile equipment manufactured prior to July 1, 1969

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.12017
Work on power circuits.

Electrocution has resulted in fatalities at mine sites. Wherever work is being done on electrical power circuits, proper procedures and tools should be used to prevent these accidents.

Fatalities occurred related to 30 CFR §56.12017 when field repairs were made to energized electrical systems and when work was done on energized electrical circuits in electrical boxes.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR § 56.12017 states the following regarding **Work on power circuits**:

"Power circuits shall be de-energized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by authorized personnel."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Observe miners working on power circuits for these types of conditions which led to fatalities:

- Power circuits not de-energized before working on circuits.
- Switches not locked out or other measures taken to prevent power circuits from being energized without knowledge of individuals working on them.

Violations of this standard are found at electrical stations/MCC rooms or electrical panels.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection, cont'd.

Before working on power circuits, 56.12017 requires:

1. De-energized power circuits (unless hot-line tools are used).
2. Persons working on the circuits must post suitable warning signs.
3. Lock out switches or take other measures to prevent circuit from being re-energized.
4. The signs and locks left in place until removed by the persons who placed them, or by authorized personnel.

If you observe electrical work being performed, determine:

- Is work being done on energized circuits?
- Is there a "suitable" warning sign posted?
- Does the suitable warning sign identify all persons working on the circuit?
- Are switches locked out? If not, what suitable measures are being taken to prevent circuits from being energized?
- Is a lock and suitable warning sign on the correct circuit switch?

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspection Tips

You should determine how operators prevent energizing the systems when persons are working on the power circuits.

Inspect MCC rooms for disconnected switches which are not locked or do not have suitable signs or preventive devices. Determine why the switches are open and if work is being conducted on the power circuit.

Click here to view MSHA's Accident Prevention Program Miner's Tips, Electrical Lockout and Tag.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Before work can be performed on an electrical circuit (without hot-line tools), the standard requires the power circuits be:

- [x] De-energized
- [ ] Tagged with a DANGER tag
- [x] Locked by the individuals doing the work
- [x] Have suitable warning signs posted by the individuals doing the work

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Done

Fatality Prevention - Rules to Live By

Knowledge Check

Who can remove the locks and warning signs (tags) from the power circuit switches? (select all that apply)

- ☐ The mine owner
- ☐ The chief electrician
- ☐ The equipment operator
- ☐ The persons who installed them
- ☐ Authorized personnel

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.16002(c)
Bins, hoppers, silos, tanks, and surge piles.

Maintenance and inspection of bins, hoppers, silos, tanks, and surge piles occur every day in the mining industry. However, it can be a deadly task if the proper procedures are not followed.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.16002(c) states the following about **Bins, hoppers, silos, tanks, and surge piles:**

"Where persons are required to enter any facility listed in this standard for maintenance or inspection purposes, ladders, platforms, or staging shall be provided. No person shall enter the facility until the supply and discharge of materials have ceased and the supply and discharge equipment is locked out. Persons entering the facility shall wear a safety belt or harness equipped with a lifeline suitably fastened. A second person, similarly equipped, shall be stationed near where the lifeline is fastened and shall constantly adjust it or keep it tight as needed, with minimum slack."

Select Next to continue.

Fatality Prevention - Rules to Live By

Parts of 30 CFR § 56.16002(c)

There are four main parts to 16002(c):

1. Ladders, platforms, or staging must be provided for persons entering any facility for maintenance or inspection purposes.
2. Persons cannot enter the facility until the supply and discharge of materials has ceased and the supply and discharge equipment has been locked out.
3. A safety belt or harness equipped with a lifeline, must be worn by anyone entering the facility.
4. A second person tends the lifeline and is similarly equipped.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Miners entering bins, hoppers, silos, tanks, and surge piles have suffered fatal accidents when violations of these types of condition(s) led to fatalities:

- Persons entering bins, tanks, hoppers or surge piles without wearing fall protection where there is a fall hazard.
- A second person is not provided to tend the lifeline.
- Persons entering bins and hoppers when flow of materials has not ceased and/or supply and discharge equipment is not locked out.
- Safe access in and around working areas is not provided.

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection, cont'd.

When miners work in bins, tanks, hoppers or surge piles, check to see if a second person is tending the lifeline.

Is the person tending the lifeline equipped with a harness/safety belt and a lifeline? These activities require the operator to have a minimum of two harnesses/safety belts and lifelines.

Be aware for these types of activities when the mine you are inspecting has pit operations in progress but the plant/facilities are down.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

According to 56.16002(c), what are the procedures for tending a lifeline?

- Occasionally adjusting it or keeping it tight as needed, with minimum slack.
- Constantly adjusting it or keeping it tight as needed, with minimum slack.
- Occasionally pulling on it to make sure everything is okay.
- Constantly pulling on it to make sure everything is okay.

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

Where should the second person tending the lifeline be located?

- Anywhere outside the equipment as long as the lifeline is attached to their harness.
- Close enough so they can see the other person.
- About 5 feet from the other person.
- Near where the lifeline is fastened.

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

Knowledge Check

What must happen before you can enter a facility as identified in 56.16002(c)? (select all that apply)

- [ ] The supervisor must be present.
- [ ] Supply & discharge equipment must be locked out.
- [ ] Loose material must be cleaned up.
- [ ] The electrician must shut down the plant.
- [ ] The supply & discharge of materials must cease.

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

30 CFR §56.14207
Parking procedures for unattended equipment.

Failure to follow proper parking procedures has resulted in the deaths of miners. Mobile equipment left unattended without following the proper parking procedures has moved, unexpectedly striking miners and causing fatal injuries. These procedures need to be followed regardless of the length of time the mobile equipment is left unattended.

Select Next to continue.

Fatality Prevention - Rules to Live By

30 CFR §56.14207 states the following about **Parking procedures for unattended equipment:**

"Mobile equipment shall not be left unattended unless the controls are placed in the park position and the parking brake, if provided, is set. When parked on a grade, the wheels or tracks of mobile equipment shall be either chocked or turned into a bank."

Select Next to continue.

Fatality Prevention - Rules to Live By

Observations: During Inspection

Failure to follow parking procedures for unattended equipment has led to these types of conditions resulting in fatalities:

- Mobile equipment left unattended and controls not placed in the park position.
- Provided parking brake not set.
- Mobile equipment parked on a grade and wheels/tracks are not chocked or turned into a bank.

During your inspection, observe parked mobile equipment.

Note whether chocks are provided for mobile equipment that might normally park in different areas throughout the shift, such as lube/fuel trucks.

Remember that mobile equipment includes light vehicles (ex: pick-ups, vans, etc.)

Select Next to continue.

Fatality Prevention - Rules to Live By

Inspector Tips

In the inspection, observe parking procedures at congested and high pedestrian areas, such as lunch shacks during meal times and parking procedures at restrooms throughout the shift.

Inspect parking procedures for all mobile equipment parked on a grade.

Select Next to continue.

Fatality Prevention - Rules to Live By

Knowledge Check

Does putting an automatic transmission in park suffice for setting a park brake?

- Yes
- No

Done

Select your answer(s) and click Done. The Next button will not appear until you answer the question and click Done.

Fatality Prevention - Rules to Live By

A note on gravity

Inspectors should carefully evaluate violations of the most frequently cited standards when determining the likelihood of occurrence and expected injury. This step is critical in the prevention of fatal accidents.

In conducting the evaluation, give weight to all known information – including, but not limited to, relevant accident data – concerning previous instances in which such violation has resulted in serious injuries or fatalities. The inspector's evaluation of gravity relative to the citation / order requires a weighing of factors in three general areas:

- The likelihood of an occurrence of the injury or illness against which the standard is directed;
- The gravity of the injury or illness if it has occurred or were to occur; and
- The number of persons affected in the event an injury occurred or the number of persons who would be expected to be injured if an accident or overexposure occurred as a result of the violation.

Select Next to continue.

Fatality Prevention - Rules to Live By

A note on negligence

Similarly, in determining the operator's negligence in allowing such violations to occur, you should give weight to the fact that the requirements imposed by these standards are clearly stated, fundamental to safety, of long standing, and well understood as a result of enforcement and litigation. In evaluating negligence, inspectors will consider:

- Degree of danger to the miners
- Agent knowledge
- Length of time condition has existed
- Obviousness or extensiveness of the hazardous condition
- Mine violation history
- Effort or lack of effort to abate

Select Next to continue.

Fatality Prevention - Rules to Live By

Now that you've reviewed the most frequently cited Metal/Nonmetal standards contributing to fatalities in the country, you can take that information and use it to help operators, supervisors, miners' representatives, miners and other members of the mining community to improve safety and health in America's mines.

One death is too many. We can end fatalities in the nation's mines.

Select Next to continue.

Fatality Prevention - Rules to Live By

Congratulations!

You have completed the Metal/Nonmetal portion of the **Prevent Fatalities - Rules to Live By** training course.

- Select *Next* to view the Standards Menu. This will allow you to review individual standards.
- Return to Beginning of the online course
- Return to Coal/Metal menu

Select Next to continue.

Fatality Prevention - Rules to Live By

The 13 standards frequently cited in Metal/Nonmetal are:

56.14105	Procedures during repairs or maintenance
56.15005	Safety belts and lines
56.9101	Operating speeds and control of equipment
56.14101(a)	Service brake performance
56.14205	Machinery, equipment, and tools used beyond design
56.20011	Barricades and warning signs
56.16009	Persons shall stay clear of suspended loads
57.3360	Ground support use
56.14131(a)	Seat belts provided and worn in haul trucks
56.14130(g)	Wearing seat belts
56.12017	Work on power circuits
56.16002(c)	Bins, hoppers, silos, tanks, and surge piles
56.14207	Parking procedures for unattended equipment

Select the links in the chart above to review the individual standards.

Regulations Resources Contact Back Next

Regulations

All regulations cited within this online module can be found on the MSHA Web site within the 30 CFR. Click a link below to visit the 30 CFR online. (Links open in a new window)

- 30 CFR Parts 1 through 199
- 30 CFR §56: Surface Metal/Nonmetal
- 30 CFR §57: Underground Metal/Nonmetal
- 30 CFR §75: Underground Coal
- 30 CFR §77: Surface Coal

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Fatality Prevention - Rules to Live By

Resources

Click below for resources related to the Prevent Fatalities - Rules to Live By program.

- ***Prevent Fatalities - Rules to Live By*** Single Source Page
  http://www.msha.gov/focuson/RulestoLiveBy/RulestoLiveBy.asp

- MSHA Accident Prevention Program
  http://www.msha.gov/Accident_Prevention/appmain.htm

Technical Help

If you have trouble accessing the system or any technical problems with this course, please email MSHA-ETraining@dol.gov.